

Environmental Guidance of Behavior Contrasted with S-R Psychology

The effect of selection by reinforcement, as described in *Learning and Complex Behavior (LCB)*, is to change the environmental guidance of behavior. “That is, what is selected is always an environment–behavior relation, never a response alone” (*LCB*, p. 68). This view of the effects of reinforcement may appear inconsistent with Skinner’s position that operants are “emitted” not elicited. This view of reinforcement may also appear consistent with so-called “S-R psychology” in which reinforcers are said to change the strengths of associations between stimuli and responses. However, both of these suppositions are incorrect: The view that reinforcers select environment-behavior relations is consistent with Skinner views and inconsistent with S-R psychology.

Operants and S-R Psychology

Skinner did not merely assert the central role of the consequences of behavior; he persuasively demonstrated it experimentally. Once such control is accepted as an empirical fact and not simply as a theoretical preference, the S-R position becomes untenable. A central distinction between S-R psychology and the view introduced by Skinner is how one accounts for variability in behavior. In S-R psychology, variability in behavior is due to variability in the environment: When a response occurs there must have been some environmental event that changed and evoked the response. If the response varies in frequency, it is because the environmental events varied in frequency. On this view, there is always a nonzero correlation between environmental events and behavior. Further, in S-R psychology frequency of response (or frequency per unit time, i.e., rate) cannot be a fundamental measure of behavior because response rate is determined by the rate of stimulus presentation. In contrast, Skinner held that, even when there is no identifiable variability in the environment, variability in behavior may remain lawful: Behavior undergoes orderly change because of its consequences. Indeed, the empirical facts are that—at the level of behavioral observations—lawful relations exist between the occurrence of a response and the contingencies of reinforcement even when the environment is stable.

Environmental Guidance with Nondifferential and Differential Procedures

In *LCB*, the learner is described as “immersed in a continuous succession of environmental stimuli . . . in whose presence a continuous succession of responses . . . is occurring. . . . When a [reinforcing] stimulus is introduced into this stream of events, then . . . selection occurs (cf. Schoenfeld & Farmer, 1970)” (p. 49). At the moment when the reinforcer occurs—what Skinner casually referred to as “the moment of Truth”—some stimuli necessarily precede the reinforced response in *both* the differential and nondifferential conditioning procedures. In other words, there is no basis by which the learner can distinguish between differential and nondifferential procedures at the “moment of reinforcement” (Ferster & Skinner, 1957, pp. 2–3). Therefore, there is no basis by which different processes could be initiated for nondifferential as contrasted with differential procedures (i.e., response strengthening in the first procedure and stimulus control of response strengthening in the second).

During differential operant conditioning, stimuli are sensed in whose presence a response is followed by a reinforcer. However, environment–behavior–reinforcer sequences necessarily occur in nondiscrimination procedures as well. The two procedures differ with respect to the *reliability* with which particular stimuli are present before the reinforced response, but this

difference cannot be detected on a single occasion. The essence of reliability is repeatability. The differential-nondifferential distinction emerges as a cumulative effect of the occurrence of reinforcers over repeated individual occasions. In laboratory procedures that implement nondifferential conditioning, stimuli are sensed prior to the response–reinforcer sequence, but no stimuli are *reliably* sensed prior to the sequence (cf. Catania & Keller, 1981, p. 163; Dinsmoor, 1995, p. 52).

Skinner had much earlier come to the conclusion that the environment invariably guides the emission of operants: “It is the nature of [operant] behavior that . . . discriminative stimuli are practically inevitable” (Skinner, 1937, p. 273). The view that reinforcers always select environment– behavior relations and that various procedures differ among themselves in the particular stimuli and responses that are likely to be present at the moment of selection is consistent with central aspects of Skinner’s thinking. As noted in *LCB*, although Skinner’s treatment of respondent and operant conditioning emphasized the differences between the two procedures and their outcomes, the present treatment is consistent with his emphasis on the what he called the “three-term contingency” (Skinner, 1938, 1953). That is, the process of reinforcement always involves three elements— a stimulus, a response, and a reinforcer. There is nothing in a unified theoretical treatment of conditioning in the classical and operant procedures that minimizes the crucially important differences between the outcomes of the two procedures.

Skinner’s finding—reinforcers produce orderly changes in behavior without reference to the environment in which the behavior occurs—had critically important implications for both experimental and applied work. As Shull observed, the finding was “... liberating because ... fundamental relationships could be established in procedures that allowed responses to occur repeatedly over long periods of time without the constraints of trial onset and offset” (Shull, 1995, p. 354). For experimental work, the operant opened up the study of the effects of schedules of reinforcement on behavior (Ferster & Skinner, 1957; see *LCB*, pp. 109 ff.). By manipulating the specific behavioral conditions under which the reinforcer occurs, the rate of responding could be varied in ways that were previously attributed to changes in motivation. For applied work, a client’s behavior could be changed without reference to the environmental history of the behavior. As an example, the aggressive behavior of a child on a playground might have previously been reinforced when directed toward younger siblings at home. However, even though the teacher may not be aware of that history, the strength of the aggressive behavior can often be affected by consequences instituted on the playground—e.g., time-outs. Certain environmental antecedents, such as the presence of a smaller child, may make the aggressive behavior more likely but the strength of the behavior can be affected by its consequences whatever the antecedent stimuli.

Further Treatments of the S-R Issue

The views of S-R psychology have been contrasted with those of behavior analysis in many venues. For a general, but more technical, discussion of this and related matters as well as the results of computer simulations of the type presented in Chapter 2, go to:

<http://seab.envmed.rochester.edu/jeab>

Left-click on “Selected articles archive” and then insert “1997” in the “Search our site” window. Download the PDF file for the article by Donahoe, Palmer, & Burgos and related articles. The site is sometimes “busy.”

Direct links to the articles are given below but these links are even more often “busy.”

<http://seab.envmed.rochester.edu/jeab/articles/1997/jeab-67-02-0193.pdf>
and
<http://seab.envmed.rochester.edu/jeab/articles/1997/jeab-67-02-0259.pdf>

(Reading a PDF files requires the Adobe Acrobat Reader. For a free download of the Reader, go to:

<http://www.adobe.com/products/acrobat/readstep2.html>
(Server is sometimes busy)

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